AudioCodes Enabling Technology Products

MediaPack™ Series Analog VoIP Gateways (MP-102/104/108/124)

MP-1xx Fast Track Installation Guide

MGCP, MEGACO, H.323 & SIP

Version 4.21

Document #: LTRT-61402

AudioCodes

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used. Only industry-standard terms are used throughout this manual. Hexadecimal notation is indicated by 0x preceding the number.

Related Documentation

The following manuals provide additional information on the installation, configuration, and operation of the **MP-1xx**:

MP-1xx/MGCP-MEGACO User's Manual, Document #: LTRT-00714

MP-1xx/MGCP-MEGACO Release Notes, Document #: LTRT-00616

MP-1xx/H.323 User's Manual, Document #: LTRT-00651 Rev 001

MP-1xx/H.323 Release Notes, Document #: LTRT-65202

MP-1xx/SIP User's Manual, Document #: LTRT-00654 Rev 001

MP-1xx/SIP Release Notes, Document #: LTRT-65602

VoPLib User's Manual, Document #: LTRT-00844

VoPLib API Reference Manual, Document #: LTRT-00840

Note 1: The **MP-124** 24-port, **MP-108** 8-port, **MP-104** 4-port and **MP-102** 2-port Media Gateways have similar functionality except for the number of channels (the **MP-124** and **MP-102** support only FXS), and all versions are referred to collectively in this manual as the **MP-1xx**.

Note 2: **MP-10x** refers to **MP-108** 8-port, **MP-104** 4-port and **MP-102** 2-port Gateways.

Note 3: **MP-1xx**/FXS refers only to the **MP-124**/FXS, **MP-108**/FXS, **MP-104**/FXS and **MP-102**/FXS Gateways.

Note 4: **MP-10x**/FXO refers only to **MP-108**/FXO and **MP-104**/FXO Gateways.

Regulatory Information

Declaration of Conformity

Application of Council Directives:	73/23/EEC (including amendments), 89/336/EEC (including amendments),
Standards to which Conformity is Declared:	EN55022: 1998 EN55024: 1998 EN61000-3-2: 1995 (including amendments A1: 1998, A2: 1998, A14: 2000) EN61000-3-3: 1995 EN60950: 1992 + Amendments 1, 2, 3 & 4 for MP-124/FXS EN60950: 2000 for MP-1xx/FXS
Manufacturer's Name:	AudioCodes Ltd.
Manufacturer's Address:	4 HaHoresh Street, Yehud 56470, Israel.
Type of Equipment:	Analog VoIP Gateway.
Model Numbers:	**MP-102/FXS, MP-104/FXS, MP-108/FXS, MP-124/FXS**

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directives and Standards.

	30th October, 2003	Yehud, Israel
Signature	*Date (Day/Month/Year)*	*Location*

I. Zusmanovich, Compliance Engineering Manager

Este producto está en conformidad con la directiva Europea, 89/336/EEC, 72/23/EEC
Dette produkt er i overensstemmelse med Europæiske Direktiver, 89/336/EEC, 72/23/EEC
Dieses Produkt ist konform mit der europäischen Richtlinie, 89/336/EEC, 72/23/EEC
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Este producto está em conformidade com as Diretrizes Européia, 89/336/EEC, 72/23/EEC
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Denna product följer europeiska direktiv, 89/336/EEC, 72/23/EEC
Το προιόν, είναι σύμφωνο με τους κανονισμούς της Ευρωπαικής Κοινώτητας, 89/336/EEC, 72/23/EEC
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Dette produktet er i samhørighet med det Europeiske Direktiv, 89/336/EEC, 72/23/EEC

Telecommunication Safety FXS

The safety status of each port is declared and detailed in the table below:

Ports	Safety Status
Ethernet (100 Base-T)	SELV
FXS (ODP P/Ns)	TNV-3
FXS	TNV-2

TNV-3: Circuit whose normal operating voltages exceeds the limits for an SELV circuit under normal operating conditions and on which over voltages from Telecommunication Networks are possible

TNV-2: Circuit whose normal operating voltages exceeds the limits for an SELV circuit under normal operating conditions and is not subjected to over voltages from Telecommunication Networks.

SELV: Safety extra low voltage circuit.

Declaration of Conformity

Application of Council Directives:	1999/5/EC Annex-II of the Directive.
Standards to which Conformity is Declared:	EN55022: 1998, EN55024: 1998 EN61000-3-2: 1995 (including Amendments) EN61000-3-3: 1995 TBR-21: 1998
Manufacturer's Name:	AudioCodes Ltd.
Manufacturer's Address:	4 HaHoresh Street, Yehud 56470, Israel.
Type of Equipment:	Analog VoIP Gateway.
Model Numbers:	**MP-104 FXO, MP-108 FXO**.

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directives and Standards.

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Signature	*Date (Day/Month/Year)*	*Location*

I. Zusmanovich, Compliance Engineering Manager

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Ce produit est conforme aux exigences de la Directive européenne 1999/5
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Telecommunication Safety FXO

The safety status of each port is declared and detailed in the table below:

Ports	Safety Status
Ethernet (100 Base-T)	SELV
FXO	TNV-3

TNV-3: Circuit whose normal operating voltages exceeds the limits for an SELV circuit under normal operating conditions and on which over voltages from Telecommunication Networks are possible.

SELV: Safety extra low voltage circuit.

Industry Canada Notice

This equipment meets the applicable Industry Canada Terminal Equipment technical specifications. This is confirmed by the registration numbers. The abbreviation, IC, before the registration number signifies that registration was performed based on a declaration of conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

FXO Only:

The Ringer Equivalence Number (REN) for this terminal is 0.5. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface.

The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of Ringer Equivalence Number of all devices do not exceed five

Safety Notice

Installation and service of this gateway must only be performed by authorized, qualified service personnel.

The Unit must be permanently connected to ground via the protective earth terminal.

Network Compatibility MP-10x FXO

The products support the Telecom networks in EU that comply with TBR21.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

MP-124 Notice

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

MP-1xx FXO Note

The MP-1xx FXO Output Tones and DTMF level should not exceed -9 dBm (AudioCodes setting #23) in order to comply with FCC 68, TIA/EIA/IS-968 and TBR-21.

The maximum allowed gain between any 2 ports connected to the PSTN should be set to 0 dB in order to comply with FCC 68, TIA/EIA/IS-968 Signal power limitation

Notice

This Fast Track Installation Guide describes the installation of AudioCodes' MediaPack Media Gateways (the 24-port **MP-124 FXS**, the 8-port **MP-108 FXS/FXO**, the 4-port **MP-104 FXS/FXO** and the 2-port **MP-102 FXS**, referred to collectively as the **MP-1xx**), applying to **MGCP, MEGACO, H.323** and **SIP** versions. Information contained in this document is believed to be accurate and reliable at the time of printing. However, due to ongoing product improvements and revisions, AudioCodes cannot guarantee the accuracy of printed material after the Date Published nor can it accept responsibility for errors or omissions. Updates to this document and other documents can be viewed by registered Technical Support customers at www.audiocodes.com under Support / Product Documentation.

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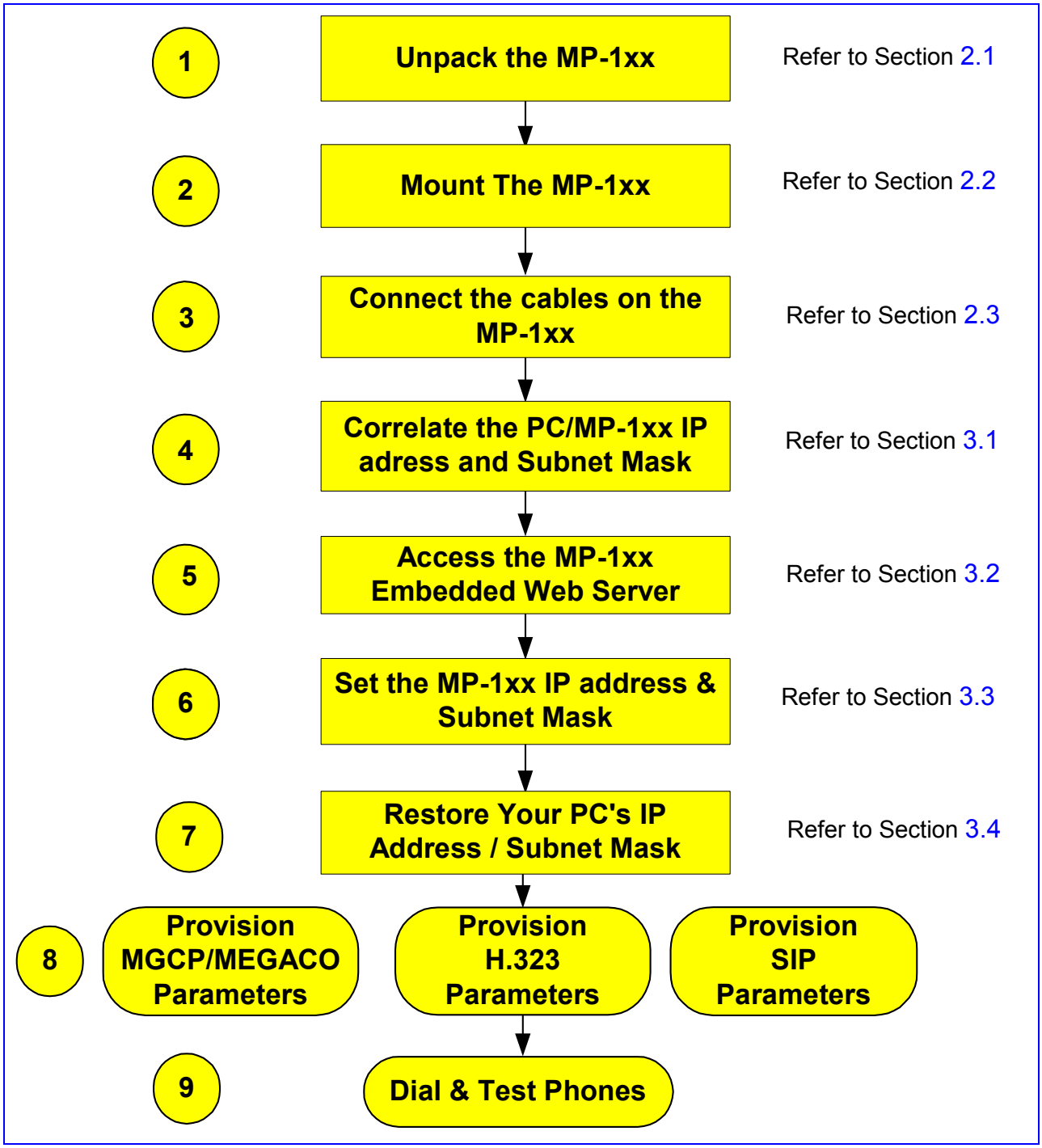
1 Quick Setup for the MP-1xx

This guide provides information on how to install the **MP-1xx** for the first time. Prior knowledge of IP networks is required.

The basic configuration procedures, outlined in Figure 1-1, are used to set up, initialize and configure the device. For detailed information on how to *fully* configure the Gateway refer to the **MP-1xx** User's Manuals.

➢ **To quickly set up the MP-1xx take these 9 steps:**

Figure 1-1: Required Steps to Install the MP-1xx



2 Installing the MP-1xx

➢ **To install the MP-1xx take these 3 steps:**

1. Unpack the **MP-1xx** (refer to Section 2.1 below).
2. Mount the **MP-1xx** (refer to Section 2.2 below).
3. Cable the **MP-1xx** (refer to Section 2.3 on page 12).

After connecting the **MP-1xx** to the power source with the AC power, the Ready and LAN LEDs on the front panel turn to green (after a self-testing period of about 60 seconds). Any malfunction changes the Ready LED to red (refer to Section 5.1 on page 26 for details on the **MP-1xx** LEDs).

You're now ready to get started with the software initialization procedure (Section 3 on page 17).

2.1 Unpacking

➢ **To unpack the MP-1xx take these 6 steps:**

1. Open the carton and remove the packing materials.
2. Remove the **MP-1xx** Gateway from the carton.
3. Check that there is no equipment damage.
4. Check, retain and process any documents.
5. Notify AudioCodes or your local supplier of any damage or discrepancies.
6. Retain any diskettes or CDs.

2.1.1 Package Contents

Ensure that the **MP-1xx** package contains (in addition to the device):

- AC power cable
- CD (software and documentation)
- Life Line cable (RJ-11 adaptor cable for 1 to 2). Supplied with **MP-10x FXS**, only
- 3 brackets (2 short, 1 long) and bracket-to-device screws for 19-inch rack installation option (**MP-10x** only)
- 2 short equal-length brackets and bracket-to-device screws for **MP-124** 19-inch rack installation

2.2 Mounting the MP-1xx

AudioCodes' **MP-1xx** can be mounted on a desktop / shelf, in a standard 19-inch rack, or on a wall (only **MP-10x**). Refer to Section 2.3 on page 12 for cabling the **MP-1xx**.

2.2.1 Mounting the MP-1xx on a Desktop or a Shelf

No brackets are required. Simply place the **MP-1xx** on the desktop / shelf in the position you require (Figure 2-1) and cable it as in Section 2.3.

Figure 2-1 on the next page shows the **MP-108**. The front panels of the **MP-102**

(FXS), **MP-104 (FXS/FXO)** and **MP-108 (FXS/FXO)** are similar except for the number of channels and their corresponding LEDs.

Figure 2-1: Desktop or Shelf Mounting

2.2.2 Mounting the MP-1xx in a 19-inch Rack

Rack Mount Safety Instructions (UL)

When mounting the chassis on a rack, be sure to implement the following Safety instructions:

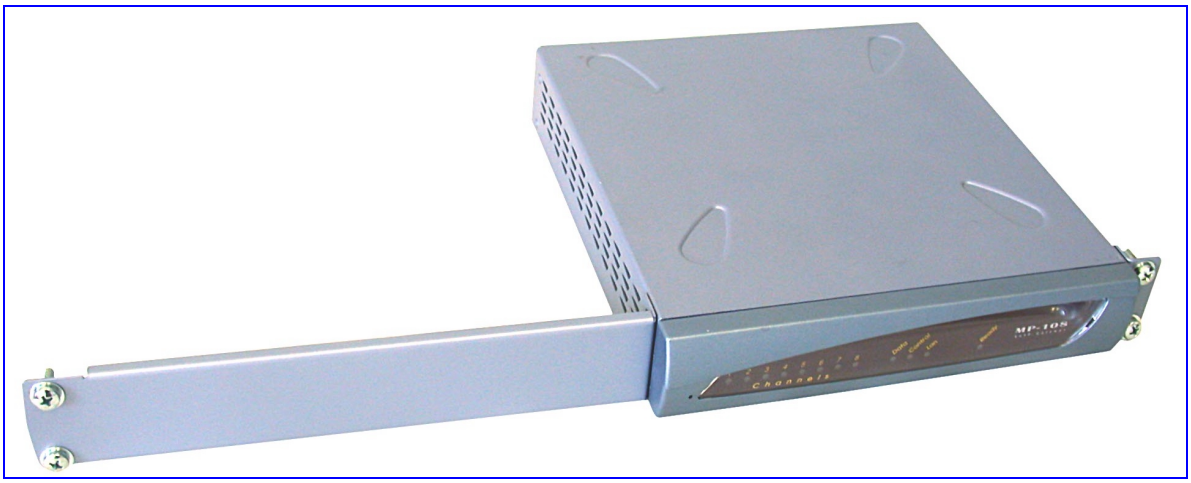
- **Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation on the equipment is not compromised.
- **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropri-ate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable Earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips.)

2.2.2.1 Mounting the MP-10x in a 19-inch Rack

Refer to Figure 2-2. First, attach a short bracket on one side and a long bracket on the other side. To attach either bracket to the **MP-10x**, unscrew 2 screws on a side, nearest the front panel. Insert the bracket's peg into the 3rd air vent down, 1st column. Swivel the bracket around until its holes align with the 2 screw holes. Use the kit's screws to fasten it in. Insert the **MP-10x** into the rack, line up the bracket

holes with the rack frame holes, and use 4 standard rack screws (not supplied) to secure the brackets to the rack frame, and cable it as in Section 2.3.

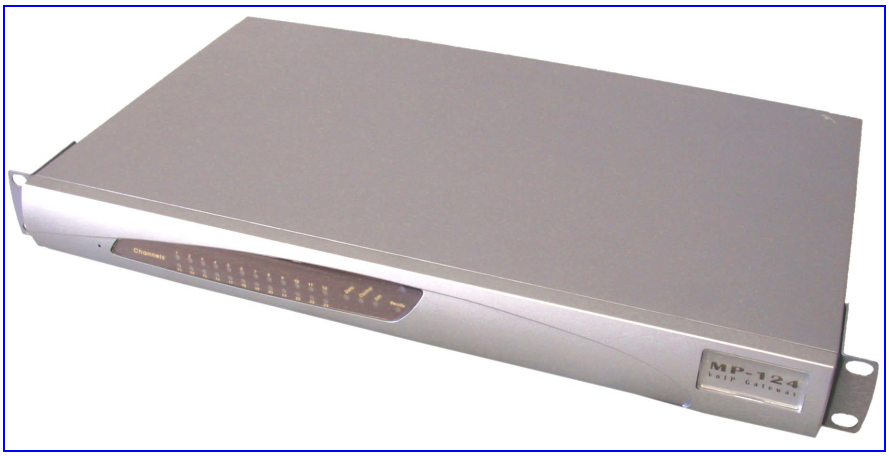
Figure 2-2: MP-10x with Brackets for Rack Installation



2.2.2.2 Mounting the MP-124 in a 19-inch Rack

Refer to Figure 2-3. First, attach the 2 short brackets. To attach either bracket to the **MP-124**, unscrew 2 screws on one side, nearest the front panel. Insert the short bracket's peg in the 3rd air vent down, 1st column. Swivel it around until its holes align with the 2 screw holes. Use the kit's screws to fasten it in. Repeat for the other short bracket on the other side. Insert the **MP-124** into the rack, line up the bracket's holes with the rack frame holes, and use 4 standard rack screws (not supplied) to secure the brackets to the rack frame, and cable it as in Section 2.3.

Figure 2-3: MP-124 with Brackets for Rack Installation



2.2.3 Mounting the MP-10x on a Wall

Refer to Figure 2-4 on the next page. First, attach the 2 short brackets. To attach either bracket to the **MP-10x**, unscrew the screw nearest the device's base on either side, nearest the front panel. On one side, insert the small bracket's peg in the 3rd air vent down, front column. Swivel the bracket around until its wall side aligns with the base. Use the kit's screws to fasten it in. Repeat with the other small bracket on the other side of the device. Attach the brackets to the wall, and cable it as in Section 2.3.

Figure 2-4: MP-10x Wall Mount

2.3 Cabling the MP-1xx

Refer to Table 2-1 on page 13 for the cabling procedure for the **MP-1xx**.

2.3.1 MP-1xx Rear Panel Connectors

Note 1: **MP-10x** (FXS/FXO) Media Gateways feature identical rear panel connectors and LEDs, located slightly differently from one device to the next.

Note 2: The RJ-45 port (Eth 1) on the **MP-10x FXO** rear panel is inverted on the **MP-1xx FXS**. The label on the rear panel also distinguishes **FXS** from **FXO** devices.

Figure 2-5: MP-108 (FXS/FXO) Rear Panel Connectors

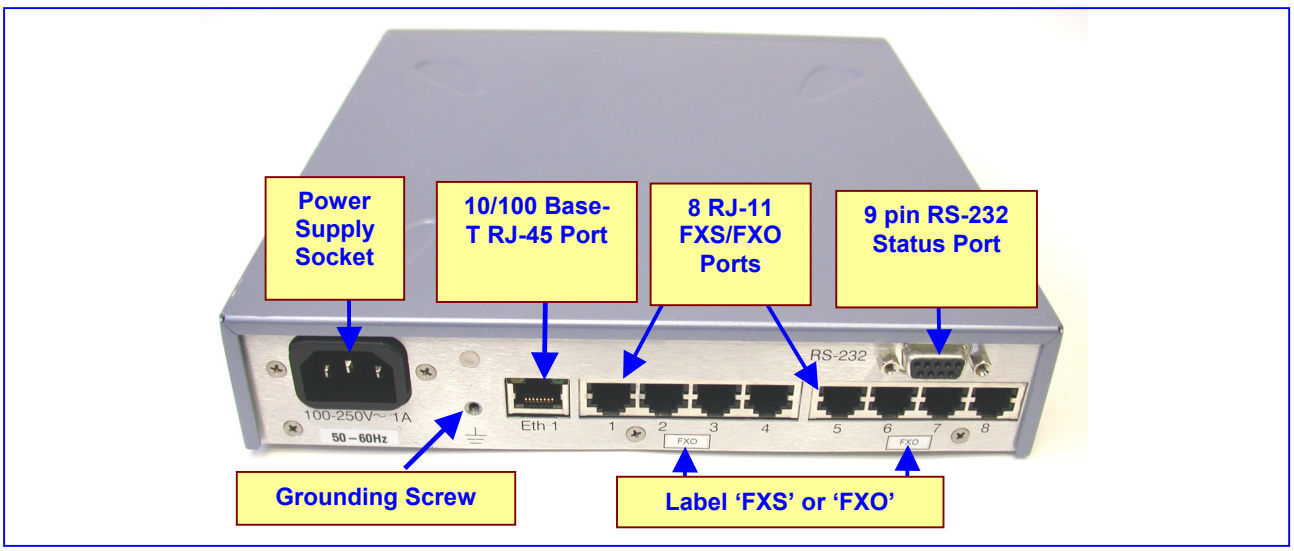
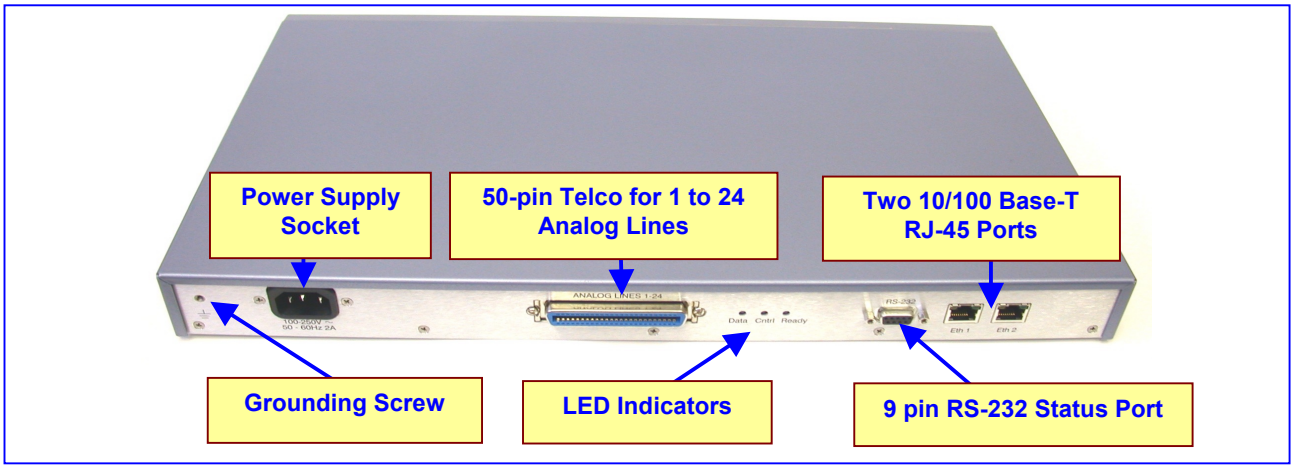


Figure 2-6: MP-124 (FXS) Rear Panel Connectors


Power Supply Socket
50-pin Telco for 1 to 24 Analog Lines
Two 10/100 Base-T RJ-45 Ports
Grounding Screw
LED Indicators
9 pin RS-232 Status Port

2.3.2 Cables and Cabling Procedure

Cable your **MP-1xx** according to each section of Table 2-1.

Table 2-1: Cables and Cabling Procedure

Cable	Cabling Procedure
RJ-45 Ethernet cable	Connect the 10/100 Base-T RJ-45 Ethernet port directly to the IP network (after changing the Gateway's initial IP address), using a standard Ethernet cable. For connector's pinout refer to Figure 2-7 on page 14. For information about how to connect the RJ-45 Ethernet cable when changing the Gateway's IP address for the first time refer to Section 3.1 on page 17.
RJ-11 two-wire telephone cords	Connect the RJ-11 connectors on the rear panel of the MP-10x FXS to fax machine, modem, or phones (refer to Figure 2-8).
	Connect the RJ-11 connectors on the MP-10x FXO rear panel to telephone exchange analog lines or PBX extensions (Figure 2-8).
	MP-124 FXS ports are usually distributed using an MDF Adaptor Block. Refer to Figure 2-10 for details.
50-pin Telco cable (only relevant to the MP-124 FXS). An Octopus cable is not included with the MP-124 package.	The 50-pin Telco connectors must be wired according to the pinout in Figure 2-9, and Table 2-2 on page 15. Attach each pair of wires from a 25-pair Octopus cable to its corresponding socket on the MDF Adaptor Block's rear. Connect the wire-pairs at the other end of the cable to a male 50-pin Telco connector. Insert and fasten this connector to the female 50-pin Telco connector on the MP-124 rear panel (labeled Analog Lines 1-24). Connect the telephone lines from the Adaptor Block to a fax machine, modem, or telephones by inserting each RJ-11 connector on the 2-wire line cords of the POTS phones into the RJ-11 sockets on the front of an MDF Adaptor Block as shown in Figure 2-10 below.
RS-232 serial cable	Connect the RS-232 port to your PC's RS-232 port with a straight serial cable. Using the RS-232 port is optional.
Grounding strap	When not using the power cable as the ground, connect an electrically grounded strap to the chassis grounding screw and fasten it securely according to the safety standards. This is mandatory for all installations that require separate grounding or correct surge protection.
AC Power cable	Connect the MP-1xx 100-250V~ 50-60 Hz power socket to the mains.

Figure 2-7: RJ-45 Ethernet Connector Pinouts

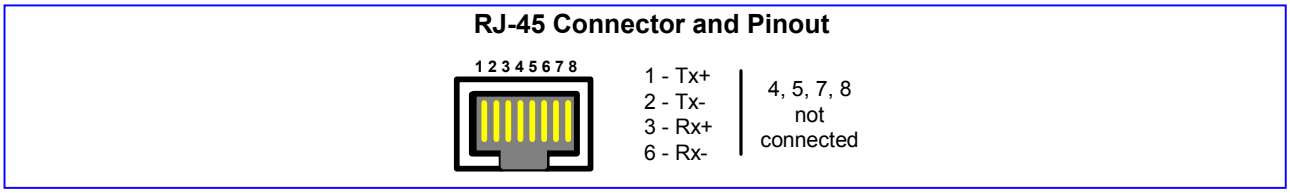


Figure 2-8: RJ-11 Phone Connector Pinout

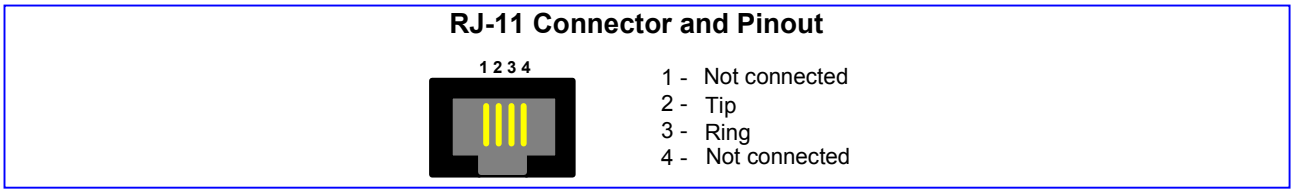


Figure 2-9: 50-pin Telco Connector (MP-124 FXS only)

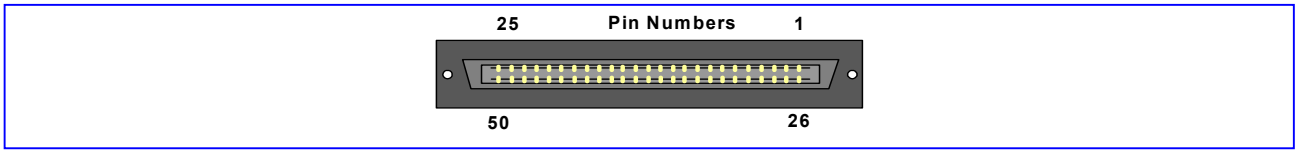


Figure 2-10: MP-124 in a 19-inch Rack with MDF Adaptor

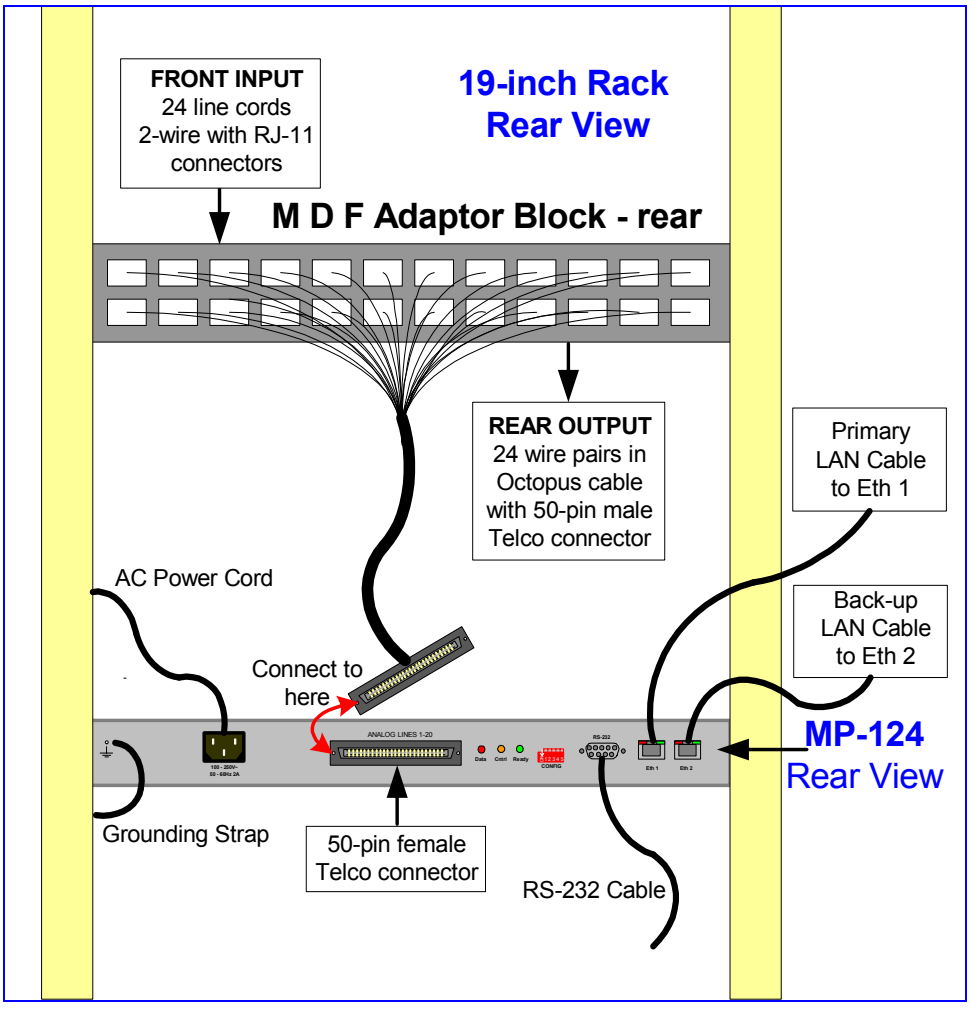


Table 2-2: Pin Allocation in the 50-pin Telco Connector

Phone Channel	Connector Pins	Phone Channel	Connector Pins
1	1/26	13	13/38
2	2/27	14	14/39
3	3/28	15	15/40
4	4/29	16	16/41
5	5/30	17	17/42
6	6/31	18	18/43
7	7/32	19	19/44
8	8/33	20	20/45
9	9/34	21	21/46
10	10/35	22	22/47
11	11/36	23	23/48
12	12/37	24	24/49

2.3.3 Installing the Life Line

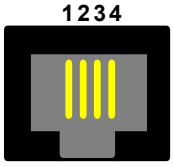
The Life Line provides a wired phone connection to any PSTN or PBX **FXS** port when there is no power, or the LAN fails. The **MP-108/FXS** and **MP-104/FXS** provide a Life Line connection on port **#4** (refer to Figure 2-12). **MP-102/FXS** provides a Life Line connection on port **#2**.

Note: The **MP-124** and **MP-10x/FXO** do NOT support the Life Line.

When there's a power outage or a LAN failure, the Life Line is wired to an (analog) POTS connection (providing access to a PSTN or a PBX) analog extension line (refer to Figure 2-12). **MP-10x/FXS** Users can therefore use the Life Line phone even when the **MP-10x** loses AC power or LAN connection. The Life Line's splitter connects pins #1 and #4 to another source of an **FXS** port, and pins #2 and #3 to the POTS phone. Refer to the Life Line pinout in Figure 2-11 below.

Note: The use of the Life Line on LAN failure can be disabled using the 'LifeLineType' *ini* file parameter. For detailed information on the *ini* file refer to Section 6 on page 29.

Figure 2-11: Life Line Pinout & RJ-11 Connector for MP-10x/FXS

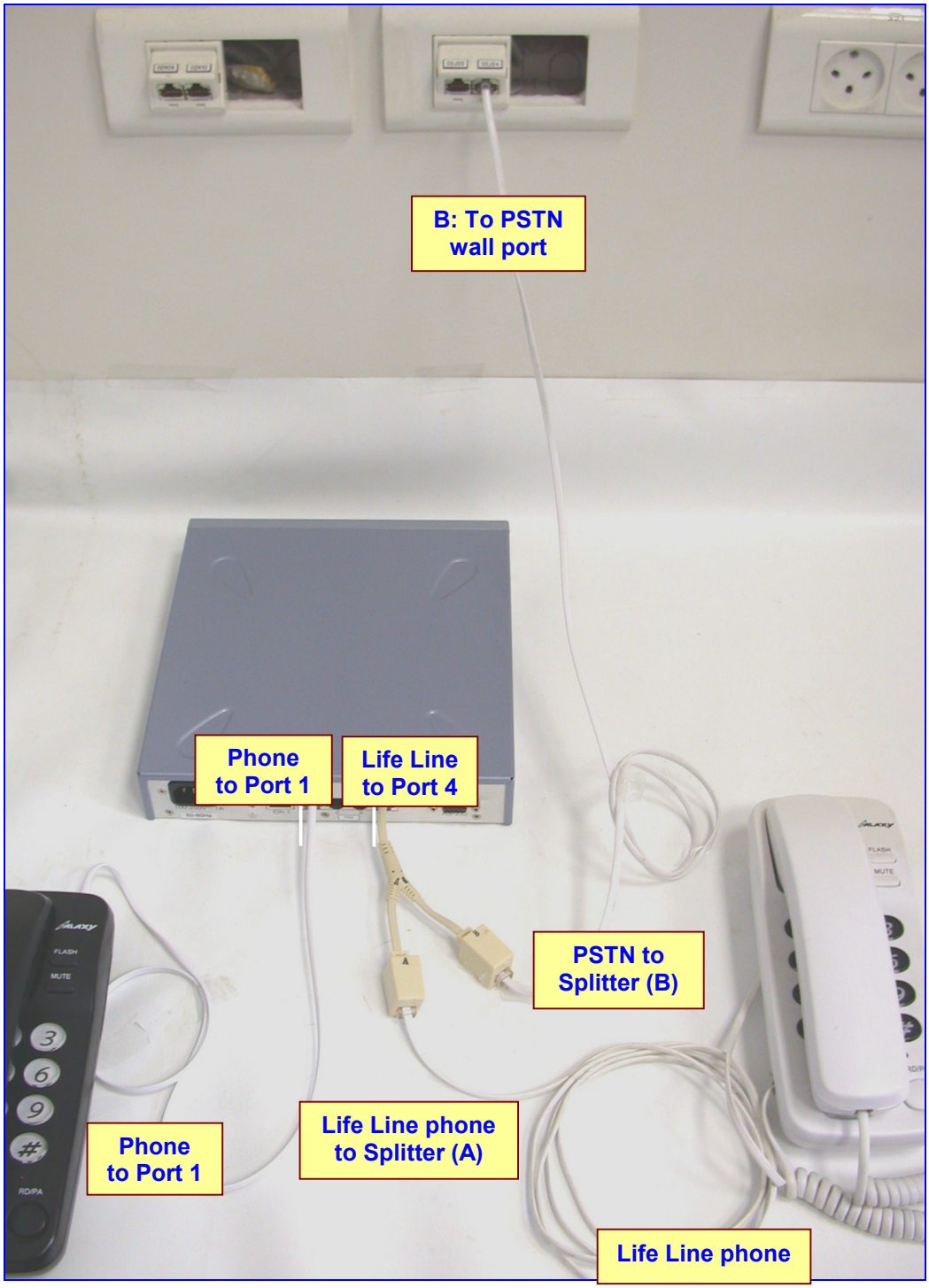


1 - Life Line Tip
2 - Tip
3 - Ring
4 - Life Line Ring

➢ To install the Life Line take these 3 steps:

1. Connect the Life Line Splitter to port number 4 (on the **MP-104** FXS or **MP-108** FXS) or to port number 2 (on the **MP-102** FXS).
2. Connect the Life Line phone to Port A on the Life Line Splitter.
3. Connect an analog PSTN line to Port B on the Life Line Splitter.

Figure 2-12: MP-104/FXS Life Line Setup


B: To PSTN wall port
Phone to Port 1
Life Line to Port 4
PSTN to Splitter (B)
Phone to Port 1
Life Line phone to Splitter (A)
Life Line phone

3 Initializing the MP-1xx

AudioCodes' **MP-1xx** application software already resides in the device's flash memory when it is supplied (with factory default parameters). **MP-1xx** devices also include an Embedded (integrally stored) Web Server.

The following procedure describes how to set up the **MP-1xx** Gateway with basic parameters using a standard Web browser (such as Microsoft Explorer).

➢ To initialize the MP-1xx take these 5 steps:

1. Correlate the PC/**MP-1xx** IP address and Subnet Mask (refer to Section 3.1 below).
2. Access the **MP-1xx** Embedded Web Server (refer to Section 3.2 on page 18).
3. Set the **MP-1xx** IP Address / Subnet Mask (refer to Section 3.3 on page 18).
4. Restore Your PC's IP Address/Subnet Mask (refer to Section 3.4 on page 19).
5. Provision the **MP-1xx** *basic* Control Protocol Parameters in the 'Quick Setup' screen.
   - For MGCP/MEGACO, refer to Section 3.5 on page 19.
   - For H.323, refer to Section 3.6 on page 20.
   - For SIP, refer to Section 3.7 on page 23.

You are now ready to start using the **MP-1xx**. For information about how to fully configure the VoIP Gateway refer to the **MP-1xx** User's Manuals.

Note: Once the Gateway is configured correctly back up your settings by making a copy of the VoIP Gateway configuration (*ini* file) and store it in a directory on your computer. This saved file can be used to restore configuration settings at a future time. For information about backing up the Gateway's configuration refer to Section 6.1 on page 30.

3.1 Correlating PC/MP-1xx IP Address & Subnet Mask

➢ To correlate the PC/MP-1xx IP Address take these 2 steps:

1. Before using your Web browser to access the **MP-1xx** device's Embedded Web Server, change your PC's IP address and Subnet Mask to correspond with the **MP-1xx** factory default IP address and Subnet Mask, shown in Table 3-1. For details on changing the IP address and Subnet Mask of your PC, refer to Windows™ Online Help (Start>Help).

Table 3-1: MP-1xx Default IP Address / Subnet Mask

FXS or FXO	Default IP Address
FXS	10.1.10.10
FXO	10.1.10.11
MP-1xx default Subnet Mask is 255.255.0.0, default Gateway IP address is 0.0.0.0	

2. Connect your computer to the **MP-1xx** using one of the following two methods:

- Use an Ethernet cross-over cable to directly connect the network card on your computer to the RJ-45 jack on the **MP-1xx**.
- Use a standard Ethernet cable to connect the network card on your computer to a port on a network hub/switch. Use a second standard Ethernet cable to connect the **MP-1xx** to another port on the same network hub/switch.

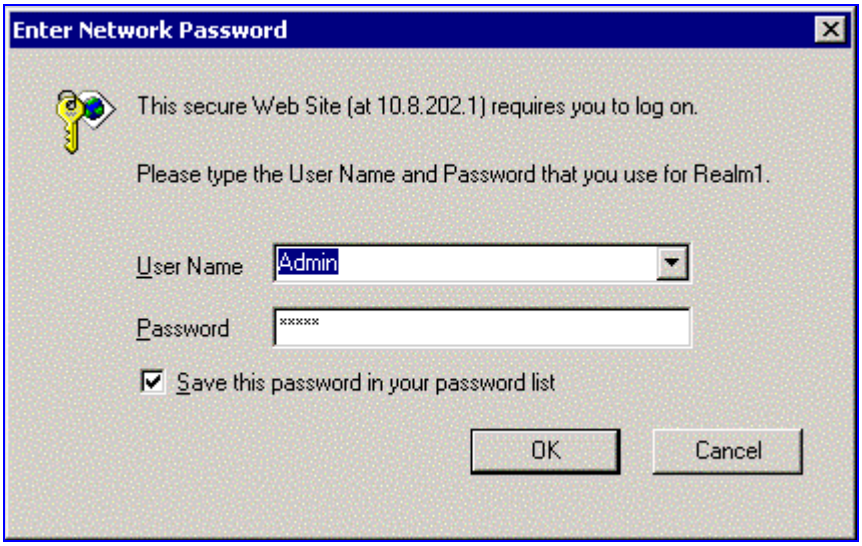
3.2 Accessing the MP-1xx Embedded Web Server

➢ To access the Embedded Web Server take these 3 steps:

1. Open a standard Web-browsing application such as Microsoft™ Internet Explorer™ (Version. 6.0 and higher) or Netscape™ Navigator™ (Version. 7.0 and higher).

.2 In the URL field, specify the IP address of the **MP-1xx** (e.g., http://10.1.10.10 for **MP-1xx FXS**); the Embedded Web Server's **Enter Network Password** screen appears, shown in Figure 3-1.

Figure 3-1: Embedded Web Server Login Screen


Enter Network Password
This secure Web Site (at 10.8.202.1) requires you to log on.
Please type the User Name and Password that you use for Realm1.
User Name
Admin
Password
*****
Save this password in your password list
OK
Cancel

3. Enter the User Name (default: Admin) and Password (default: Admin). Note that the User Name and Password fields are case-sensitive. Click **OK**; the **Quick Setup** screen is accessed, shown in Figure 3-2 (MGCP/MEGACO), Figure 3-3 (H.323), and Figure 3-5 (SIP).

3.3 Setting the MP-1xx IP Address / Subnet Mask

➢ To set the MP-1xx IP Address / Subnet Mask take these 2 steps:

1. In the Quick Setup screen, set the **MP-1xx** 'IP Address' and 'Subnet Mask' fields under 'IP Configuration' *to correspond with your network IP address settings.*
2. Click the **RESET** button and click **OK** in the prompt; The **MP-1xx** applies the changes and restarts. This takes approximately 60 seconds to complete. When the **MP-1xx** has finished restarting, the Ready and LAN LEDs on the front panel are lit green.

Note: Record & retain the IP Address and Subnet Mask you assign the **MP-1xx**. Do the same when defining new User Name and Password. If the Embedded Web Server is unavailable (for example, if you've lost your User Name and Password), use AudioCodes' BootP/TFTP configuration utility to access the device, "reflash" the load and reset the Password (refer to the **MP-1xx** User's Manuals for detailed information on using a BootP/TFTP server to access the device).

3.4 Restoring Your PC's IP Address / Subnet Mask

➢ To Restore Your PC's IP Address / Subnet Mask take these 3 steps:

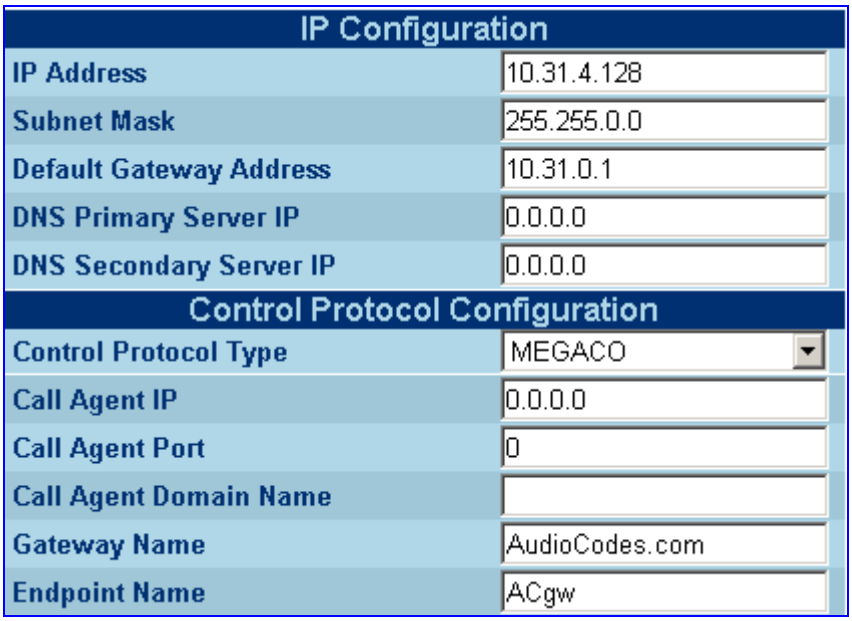
1. Disconnect your computer from the **MP-1xx** or from the hub/switch.
2. Reconnect the **MP-1xx** to the LAN.
3. Restore Your PC's IP Address / Subnet Mask to what it originally was. If necessary, restart your PC and re-access the **MP-1xx** via the Embedded Web Server with its new assigned IP address.

3.5 Provisioning MGCP/MEGACO Parameters

➢ To provision MGCP/MEGACO parameters take these 10 steps:

1. After completing the settings in Sections 3.1 to 3.4, (pages 17 & 19), the MGCP/MEGACO 'Quick Setup' screen is accessed, as shown in Figure 3-2.

Figure 3-2: MP-1xx MGCP/MEGACO Quick Setup Screen



2. In the 'Default Gateway Address' box, enter the IP address for the Default Gateway. If you do not know the IP address for the default Gateway, contact your network administrator. Enter 0.0.0.0 if default Gateway isn't used.
3. If your network features a DNS server, in the fields 'DNS Primary Server IP' and 'DNS Secondary Server IP', enter the IP address of the primary and secondary DNS servers (clarify with your Network Administrator). Note that the DNS server option is supported for MEGACO but not for MGCP.

4. Select the control protocol type: MGCP or MEGACO, under the section 'Control Protocol Configuration'.
5. In the 'Call Agent IP' box, enter the Call Agent IP address if your enterprise's network doesn't feature a DNS server that automatically defines the Call Agent's IP address. If you have a DNS server, the field is optional.
6. In the 'Call Agent Port' box, enter the Call Agent port. The default is 2427 (MGCP) and 2944 (MEGACO).
7. In the 'Call Agent Domain Name' box, enter the Call Agent Domain Name. When using the DNS server option, enter the Domain Name of the Call Agent operating with the **MP-1xx**. The DNS server automatically deduces the Call Agent's IP address from the Domain Name.
8. In the 'Gateway Name' box, enter a name to the device. (For example: 'gateway1.com'). Ensure that the name you choose is the one that the Call Manager/Agent is configured with to identify your **MP-1xx**.
9. In the 'Endpoint Name' box, enter an intuitive Endpoint Name. Ensure that the Endpoint Name you choose is the one that the Call Agent works with.
10. Click the **RESET** button and click **OK** in the prompt; The **MP-1xx** applies the changes and restarts. This takes approximately 60 seconds to complete. When the **MP-1xx** has finished restarting, the Ready and LAN LEDs on the front panel are lit green.

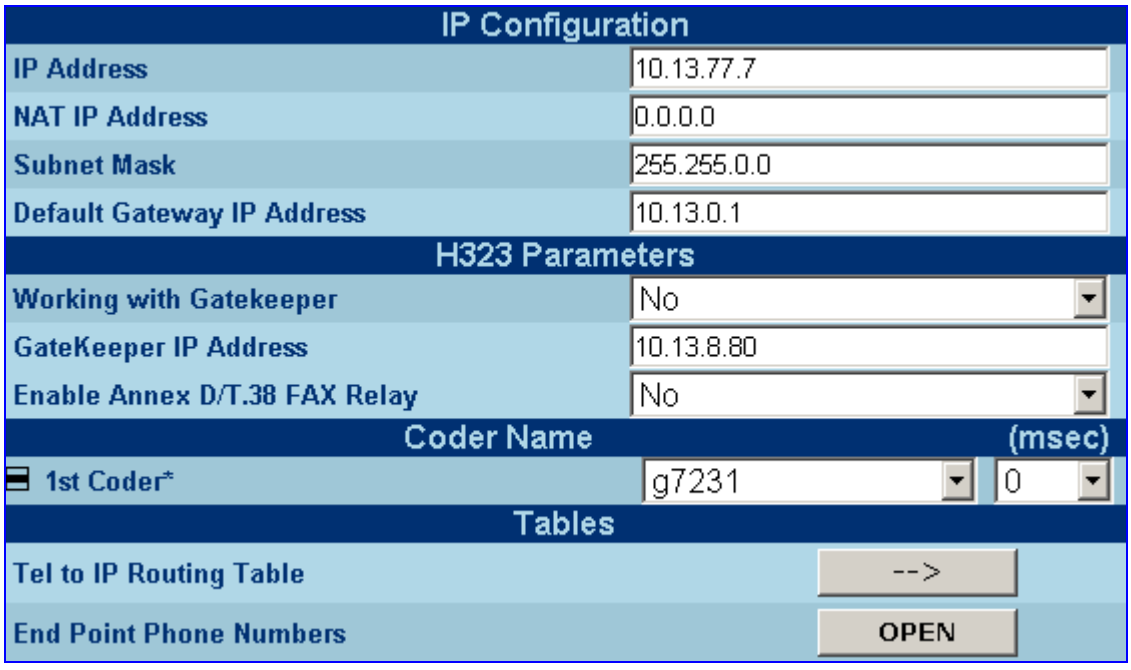
You are now ready to start using the VoIP Gateway.

3.6 Provisioning H.323 Parameters

➢ To provision H.323 parameters take these 9 steps:

1. After completing the steps in Sections 3.1 to 3.4 (pages 17 & 19), the H.323 'Quick Setup' screen is accessed, as shown in Figure 3-3.

Figure 3-3: MP-1xx H.323 Quick Setup Screen



2. If the **MP-1xx** is behind a router with NAT enabled, take the following procedures:
   - Determine the "public" IP address assigned to the router (by using, for instance, router Web management). This "public IP address" is used to configure the **MP-1xx** Static NAT IP address.
   - Enable the DMZ configuration on the residential router for the LAN port where the **MP-1xx** Gateway is connected.
   - Enter the public IP address for the **MP-1xx** in the NAT IP Address box (in addition to the Gateway's local IP address).
3. In the 'Default Gateway' Address box, enter the IP address for the Default Gateway. If you do not know the IP address for the default Gateway, contact your network administrator. Enter 0.0.0.0 if default Gateway isn't used.
4. When working with a Gatekeeper, set 'Working with Gatekeeper' field, under 'H323 Parameters', to 'Yes' and enter the IP address of the main Gatekeeper in the field 'Gatekeeper IP Address'. When no Gatekeeper is used, the internal routing table is used to route the calls.
5. Leave parameter 'Enable Annex D/T.38 FAX Relay' at its default unless your technical requirements differ.
6. Select the codec that best suits your VoIP system requirements. The default codec is: G.7231 30 msec. To program the entire list of codecs you want the **MP-1xx** to use, click the button on the left side of the Coder field; the combo boxes for the 2nd to 5th coders drop down. Select codecs according to your system requirements. Note that codecs higher on the list take precedence over codecs lower on the list.

Note: The preferred codec is the codec that the **MP-1xx** uses as a first choice for all connections. If the far end Gateway does not use this codec, the **MP-1xx** negotiates with the far end Gateway to select a codec that both sides can use.

7. To map outgoing calls to IP addresses (*when Gatekeeper isn't used*), press the arrow button next to 'Tel to IP Routing table'; the 'Tel to IP Routing & IP Security' screen opens. Each row in the routing table consists of three fields: 'status' field (a read only field that represents the quality of service of the destination IP address, this field is disabled by default), 'Destination Phone Prefix' and 'IP Address'. An outgoing phone call is directed to the IP address associated with that called number's prefix. Up to 50 different prefixes are supported. Click the **SUBMIT** button; the 'Tel to IP Routing' table is automatically updated. Click the **Close Window** button.
8. To allocate **MP-1xx** endpoints (analog lines) and their corresponding phone numbers to incoming IP calls, press the arrow button next to 'End Point Phone Number'; the 'End Points' Phone Numbers' screen opens. Enter the number of a channel, starting with 1, (or a group of channels), under the "Channel(s)' column (for example 1-4 for the first 4 endpoints) and assign each a phone number (for a group of channels, define the first number in an ordered sequence), refer to Figure 3-4 on page 22. Click the **SUBMIT** button; the 'End Point Phone Number' table is automatically updated. Click the **Close Window** button.

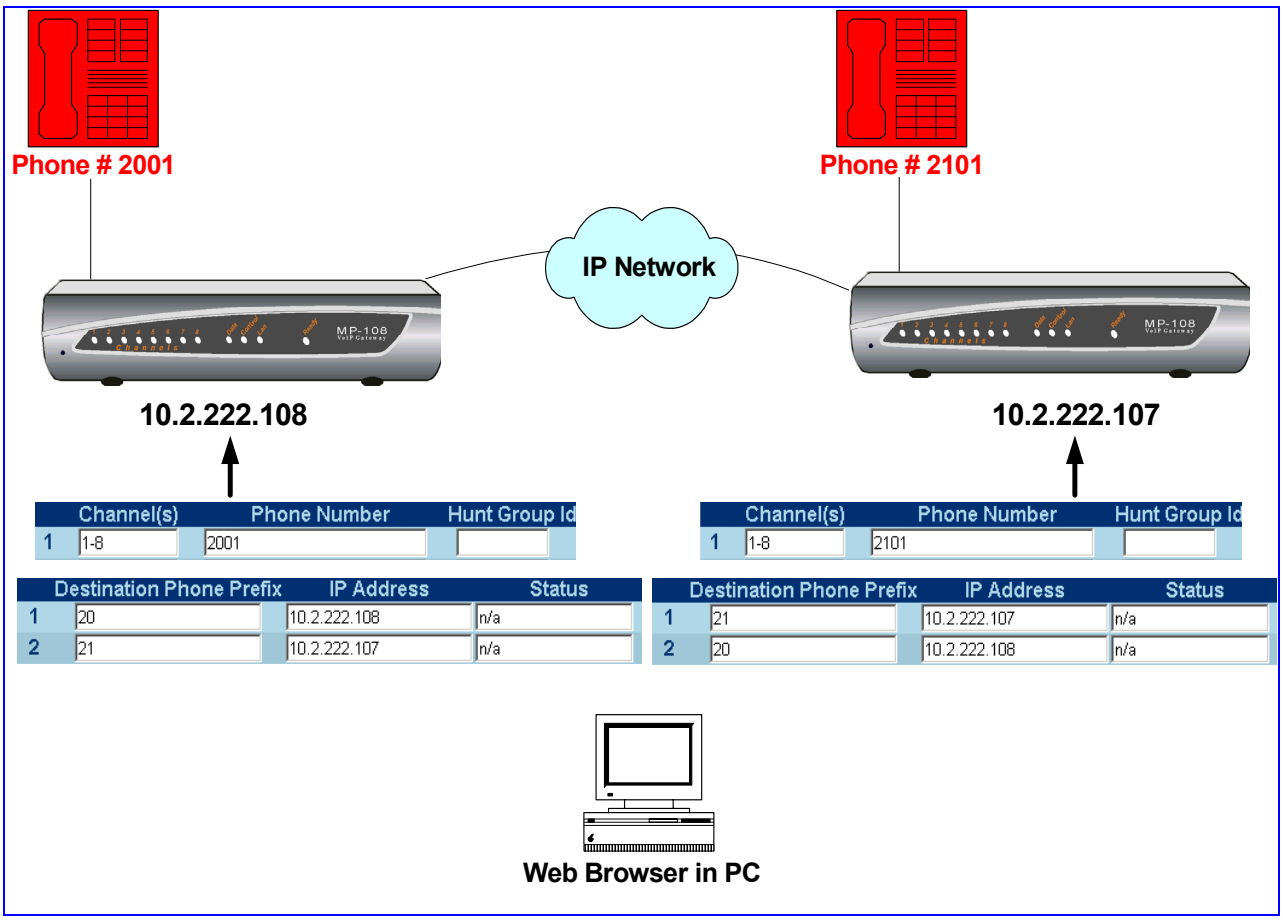
9. Click the **RESET** button and click **OK** in the prompt; The **MP-1xx** applies the changes and restarts. This takes approximately 60 seconds to complete. When the **MP-1xx** has finished restarting, the Ready and LAN LEDs on the front panel are lit green.

You are now ready to start using the VoIP Gateway.

Figure 3-4 shows an example of two **MP-108 FXS** devices' internal routing tables. The phone '2001' is connected to the first channel of Media Gateway 10.2.222.108, and phone '2101' is connected to the first channel of Media Gateway 10.2.222.107.

To establish a connection, lift the receiver of phone '2001'; you hear a dial tone and the first channel LED lights up. Dial 2101; after dialing the last digit, the data LED begins blinking (indicating traffic) and phone '2101' rings.

Figure 3-4: Example of Connecting Two MP-108 Devices



Note 1: The prefixes you choose *must differentiate* the Media Gateways from each other to ensure correct routing. In the example, using the first digit (2) doesn't differentiate the devices, thus **2** digits of the phone number are used.

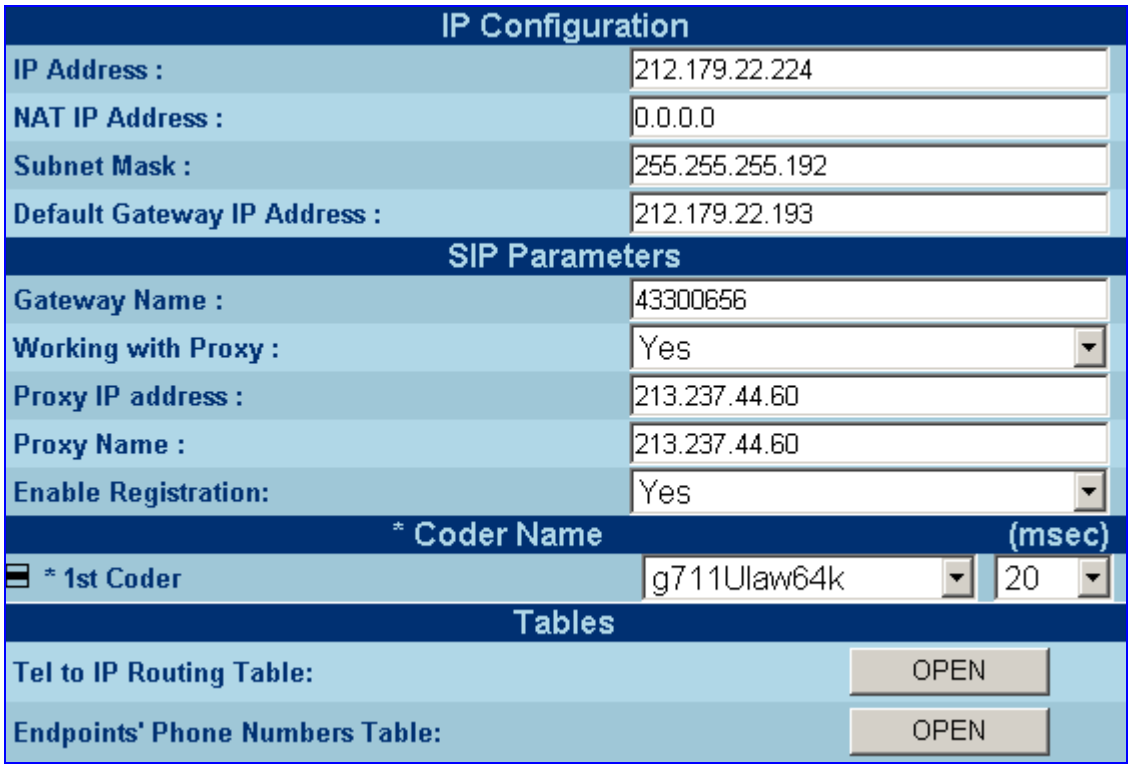
Note 2: To enable *phones connected to the same* **MP-1xx** to communicate with *each other,* define in the internal routing table the IP address and corresponding phone numbers of the device itself (applicable only to H.323 devices).

3.7 Provisioning SIP Parameters

➢ To provision SIP parameters take these 11 steps:

1. After completing the steps in Sections 3.1 to 3.4 (pages 17 & 19), the SIP 'Quick Setup' screen shown in Figure 3-5 is accessed.

Figure 3-5: MP-1xx SIP Quick Setup Screen



2. If the **MP-1xx** is behind a router with NAT enabled, take the following procedures:
   - Determine the "public" IP address assigned to the router (by using, for instance, router Web management). This "public IP address" is used to configure the **MP-1xx** Static NAT IP address.
   - Enable the DMZ configuration on the residential router for the LAN port where the **MP-1xx** Gateway is connected.
   - Enter the public IP address for the **MP-1xx** in the NAT IP Address box (in addition to the Gateway's local IP address).
3. In the 'Default Gateway' Address box, enter the IP address for the Default Gateway. If you do not know the IP address for the default Gateway, contact your network administrator. Enter 0.0.0.0 if default Gateway isn't used.
4. Under 'SIP Parameters', enter the **MP-1xx** Domain Name in the field 'Gateway Name'. If the field is not specified, the **MP-1xx** IP address is used instead (default).
5. When working with a Proxy server, set 'Working with Proxy' field to 'Yes' and enter the IP address of the main Proxy server in the field 'Proxy IP address'. When no Proxy is used, the internal routing table is used to route the calls.
6. Enter the Proxy Name in the field 'Proxy Name'. If Proxy Name is used, it replaces the 'Proxy IP Address' in all SIP messages. This means that

messages are still sent to the physical 'Proxy IP Address' but the SIP URI contains the 'Proxy Name' instead.

7. Configure 'Enable Registration' to 'Yes' or 'No':
'No' = the **MP-1xx** does not register to a Proxy server/Registrar (default).
'Yes' = the **MP-1xx** registers to a Proxy server/Registrar at power up and every 'Registration Time' seconds; The **MP-1xx** sends a register request for each channel or for the entire Gateway (according to the 'Authentication Mode' parameter). For detailed information on the parameters 'Registration Time' and 'Authentication Mode', refer to the **MP-1xx** SIP User's Manual, Document #: LTRT-00654 Rev 001.

8. Select the codec that best suits your VoIP system requirements. The default codec is: G.7231 30 msec. To program the entire list of codecs you want the **MP-1xx** to use, click the button on the left side of the Coder field; the combo boxes for the 2nd to 5th coders drop down. Select codecs according to your system requirements. Note that codecs higher on the list take precedence over codecs lower on the list.

Note: The preferred codec is the codec that the **MP-1xx** uses as a first choice for all connections. If the far end Gateway does not use this codec, the **MP-1xx** negotiates with the far end Gateway to select a codec that both sides can use.

9. To map outgoing calls to IP addresses (*when Gatekeeper isn't used*), press the arrow button next to 'Tel to IP Routing table'; the 'Tel to IP Routing & IP Security' screen opens. Each row in the routing table consists of three fields: 'status' field (a read only field that represents the quality of service of the destination IP address, this field is disabled by default), 'Destination Phone Prefix' and 'IP Address'. An outgoing phone call is directed to the IP address associated with that called number's prefix. Up to 50 different prefixes are supported. Click the **SUBMIT** button; the 'Tel to IP Routing table' is automatically updated. Click the **Close Window** button.

10. To allocate **MP-1xx** endpoints (analog lines) and their corresponding phone numbers to incoming IP calls, press the arrow button next to 'End Point Phone Number'; the 'End Points' Phone Numbers' screen opens. Enter the number of a channel, starting with 1, (or a group of channels), under the "Channel(s)' column (for example 1-4 for the first 4 endpoints) and assign each a phone number (for a group of channels, define the first number in an ordered sequence), refer to Figure 3-4 on page 22. Click the **SUBMIT** button; the 'End Point Phone Number' table is automatically updated. Click the **Close Window** button.

11. Click the **RESET** button and click **OK** in the prompt; The **MP-1xx** applies the changes and restarts. This takes approximately 60 seconds to complete. When the **MP-1xx** has finished restarting, the Ready and LAN LEDs on the front panel are lit green.

You are now ready to start using the VoIP Gateway.

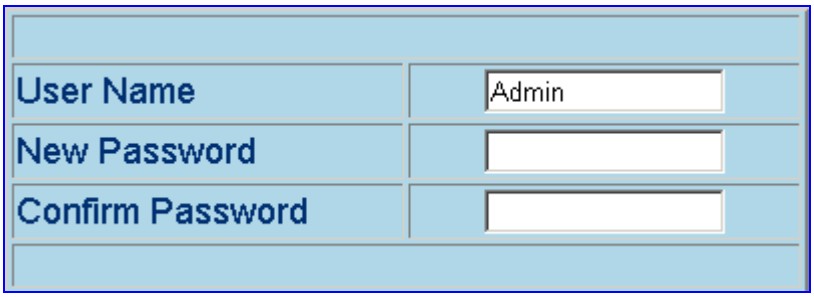
4 Changing the MP-1xx Password

To prevent unauthorized access to the **MP-1xx**, it is recommended that you change the User Name and Password that is used to access the Embedded Web Server.

➢ To change the Password take these 8 steps:

1. Access the **MP-1xx** Embedded Web Server via a standard Web browser.
2. Enter the default User Name (Admin) and default Password (Admin).
3. Click the **Advanced Configuration** button.
4. Click the **Change Password** tab; the Change Password screen is displayed (shown in Figure 4-1).

Figure 4-1: Change Password Screen



5. In the 'User Name' and 'New Password' boxes, enter the new User Name and the new Password respectively.
6. In the 'Confirm Password' box, reenter the new Password.
7. Click the **Change Password** button; the new Password is applied and the **Enter Network Password** screen appears, shown in Figure 3-1.
8. Enter the updated Password in the **Enter Network Password** screen.

5 Monitoring the MP-1xx

The **MP-1xx** provides several ways of monitoring the status of the Gateway.

- Monitoring the **MP-1xx** front panel LEDs (refer to Section 5.1 below).
- Monitoring the **MP-1xx** rear panel LEDs (refer to Section 5.2 on page 27).
- Monitoring the **MP-1xx** channels (refer to Section 5.3 on page 27).

5.1 Monitoring the MP-1xx Front Panel LEDs

The **MP-1xx** front panel LEDs indicate the Ethernet LAN status, Data (RTP) activity and state of the Gateway ports. Table 5-1 describes the meaning of each state of the LEDs on the front panel.

Table 5-1: Definition of MP-1xx Front Panel LED Indicators

LED	Type	Color	State	Definition
Ready	Device Status	**Green**	ON	Device powered, self-test OK
		Orange	Blinking	Software loading/Initialization
		Red	ON	Malfunction
LAN	Ethernet Link Status	**Green**	ON	Valid 10/100 Base-T Ethernet connection
		Red	ON	Malfunction
Control	Control Link	**Green**	Blinking	Activity, when control messages sent/received in real time
		Red	ON	No registration with Call Agent, no response from Call Agent/ Gatekeeper
		Orange	ON	No RT messages with Call Agent, but Call Agent is responding
Data	Packet Status	**Green**	Blinking	Transmitting packets
		Red	Blinking	**MP-1xx** is receiving data packets
		Blank		No traffic
Channels	Telephone Interface	**Green**	ON	The phone is off-hooked (**FXS**); the **FXO** off-hooks the line towards the PBX.
		Green	Blinking	There's an incoming call, before answering
		Red	ON	Line malfunction
		Blank	-	Normal on-hook position

5.2 MP-1xx Rear Panel LEDs

The LEDs on the rear panel are located within the RJ-45 socket. Table 5-2 describes the meaning of each state of the LEDs on the rear panel.

Table 5-2: Definition of MP-1xx Rear Panel LED Indicators

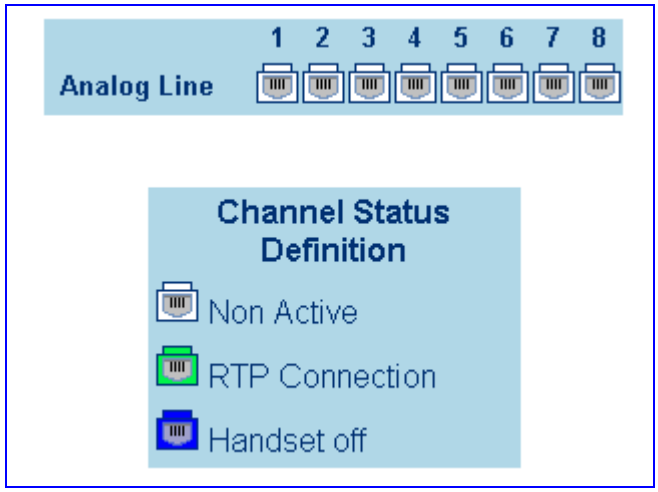
Label	Type	Color	State	Definition
ETH-1	Ethernet Status	Yellow	ON	Ethernet port receiving data
		Red	ON	Collision

5.3 Monitoring the MP-1xx Channels

➢ To monitor the status of the channels take these 2 steps:

1. Click the **Status & Diagnostics** button.
2. Click the **Channel Status** tab; the Channel Status screen is displayed, shown in Figure 5-1.

Figure 5-1: Channel Status Screen



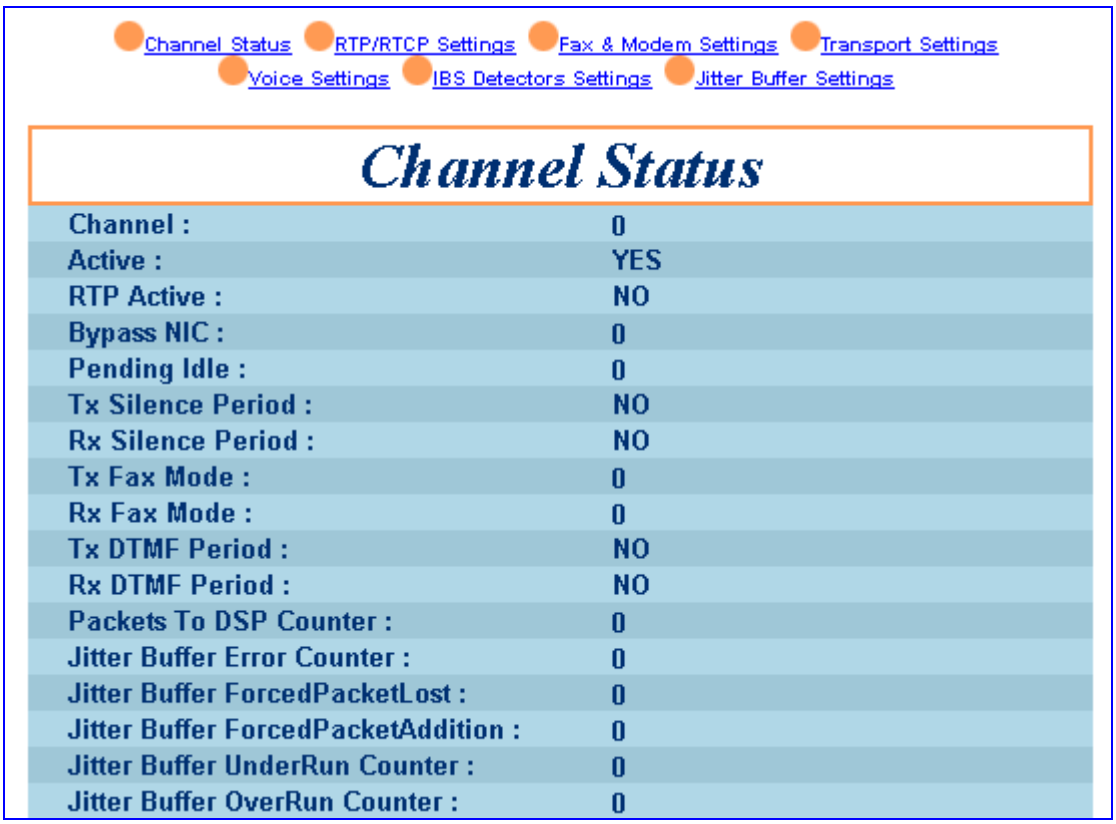
The color of each channel shows the call status of that channel.

- White indicates this channel is currently on-hook.
- Green indicates this channel is off-hook and there is an active RTP session.
- Blue indicates this channel is off-hook but there is no active RTP session.

➢ To monitor the details of a channel take these 2 steps:

1. In the Channel Status screen, click the numbered icon of the specific channel whose detailed status you need to check/monitor; the channel-specific **Channel Status** screen appears, shown in Figure 5-2 on page 28.
2. Click the submenu links to check/view a specific channel's parameter settings.

Figure 5-2: Specific Channel Status Details


Channel Status
RTP/RTCP Settings
Fax & Modem Settings
Transport Settings
Voice Settings
IBS Detectors Settings
Jitter Buffer Settings
Channel Status
Channel : 0
Active : YES
RTP Active : NO
Bypass NIC : 0
Pending Idle : 0
Tx Silence Period : NO
Rx Silence Period : NO
Tx Fax Mode : 0
Rx Fax Mode : 0
Tx DTMF Period : NO
Rx DTMF Period : NO
Packets To DSP Counter : 0
Jitter Buffer Error Counter : 0
Jitter Buffer ForcedPacketLost : 0
Jitter Buffer ForcedPacketAddition : 0
Jitter Buffer UnderRun Counter : 0
Jitter Buffer OverRun Counter : 0

6 Upgrading the MP-1xx

To upgrade the **MP-1xx** (load new software or configuration files onto the VoIP Gateway) use the Software Upgrade feature, available through the Embedded Web Server.

Note that for each software load (*cmp* file), there should be a corresponding configuration file (*ini* file). When you upgrade the **MP-1xx** software you *must* download the new *cmp* file with all other related configuration files: *ini*, Coefficient, Call Progress Tones and Voice Prompts.

Note: To save your current VoIP Gateway configuration, you must save (backup) the *ini* file before you replace the *cmp* file.

Table 6-1 below lists the files you can load using the Software Upgrade feature and describes what each file contains.

Table 6-1: Software File Types

File Type	Description
cmp	The *cmp* file contains the software for the VoIP Gateway. You load this type of file on to the MP-1xx when you are changing the version of the software.
ini	The *ini* file contains various configuration parameters (most of which can be configured via the Embedded Web Server). Download this file to enable enhanced provisioning of the MP-1xx parameters. **Note:** The *ini* file only provisions the parameters that are contained in the *ini* file. If a parameter is not specified in the *ini* file, values associated with that parameter are reset to a default value. These values may not be the same as the values that were configured for the VoIP Gateway at the time of manufacture. Note that after the file has completed downloading, the VoIP Gateway automatically restarts (software is loaded from the flash).
Coefficient.dat	The Coefficient data file (different file for FXS and FXO Gateways) contains the telephony interface configuration information for the VoIP Gateway. This information includes telephony interface characteristics, such as DC and AC impedance, feeding current and ringing voltage. This file is specific to the type of telephony interface that the VoIP Gateway supports. In most cases you have to load this type of file.
Call_Progress_Tone.dat	The Call Progress Tones data file is a region-specific, telephone exchange-dependent file that contains the Call Progress Tones levels and frequencies that the VoIP Gateway uses. Default Tone file: U.S.A.
Voice_prompt.dat	The voice announcement file contains a set of Voice Prompts to be played by the MP-1xx during operation on Call Agent request. Only MGCP/MEGACO are supported.

➢ **To upgrade the VoIP Gateway software and to keep your previous configuration, take these 4 steps:**

1. Back up the VoIP Gateway configuration (*ini* file). Follow the procedure described in Section 6.1 on page 30.
2. Load the new software (*cmp* file) onto the VoIP Gateway. Follow the procedure described in Section 6.2.1 on page 31. Note that after the *cmp* file is replace, the **MP-1xx** parameters (except for the IP address, Subnet Musk and Default Gateway) revert to their factory default values.
3. Restore the VoIP Gateway configuration and provision new features: Download the same *ini* configuration file you uploaded in Step 1. Use the Embedded Web Server to configure new features. To download the *ini* file, follow the procedure described in Section 6.2.2 on page 31. After you finish updating the new features, back up the VoIP Gateway configuration (refer to Section 6.1 on page 30).
4. Load the configuration files you require onto the VoIP Gateway (Coefficient, Voice Prompts and Call Progress Tones *dat* files). Follow the procedure described in Section 6.2.2 on page 31.

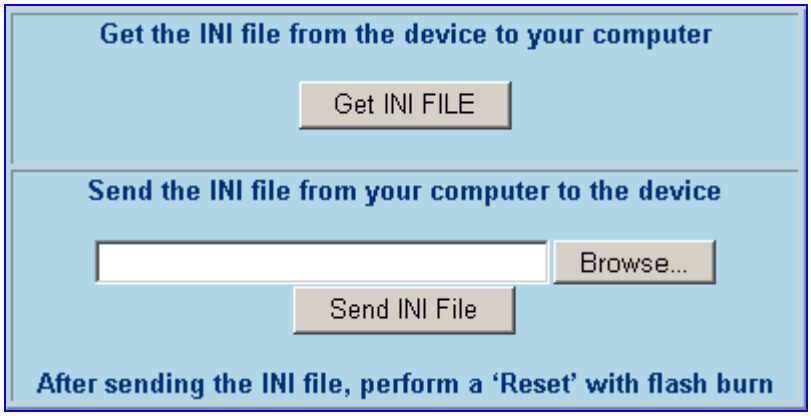
6.1 Backing up the Gateway Configuration

Back up your configuration if you want to protect your VoIP Gateway programming. The backup *ini* file includes only those parameters that were modified and contain other than default values.

➢ **To back up the *ini* file take these 5 steps:**

1. Click the **Advanced Configuration** button.
2. Click the **Configuration File** tab; the Configuration File screen is displayed (shown in Figure 6-1).

Figure 6-1: Configuration File Screen


Get the INI file from the device to your computer
Get INI FILE
Send the INI file from your computer to the device
Browse...
Send INI File
After sending the INI file, perform a 'Reset' with flash burn

3. Click the **Get INI FILE** button.
4. Navigate to the folder where you want to save the *ini* file.
5. Click the **Save** button; the VoIP Gateway starts uploading the *ini* file into the folder you selected. A message appears when the file transfer is completed.

6.2 Updating the Software and Configuration Files

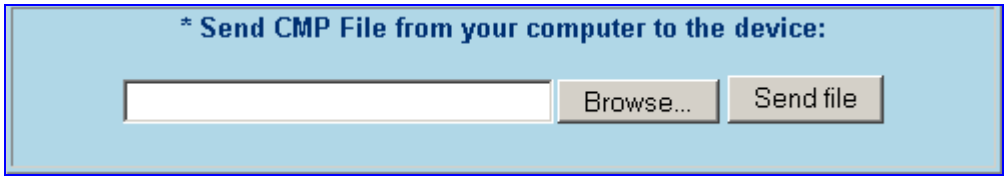
The Software Update screens allow you to upgrade the VoIP Gateway by downloading new software or configuration files to the VoIP Gateway.

6.2.1 Downloading the Software File

➢ **To download the software file take these 6 steps:**

1. Click the **Software Upgrade** button.
2. Click the **Software File Download** tab; the Software File Download screen is displayed (shown in Figure 6-2).

Figure 6-2: Software File Download Screen



3. Click the **Browse** button.
4. Navigate to the folder that contains the *cmp* file you want to download.
5. Click the *cmp* file and click the **Open** button; the filename and path of the file appears in the box beside the **Browse** button.
6. Click the **Send File** button; the new version is stored in flash memory.

Note that after the file has completed downloading, the VoIP Gateway automatically restarts.

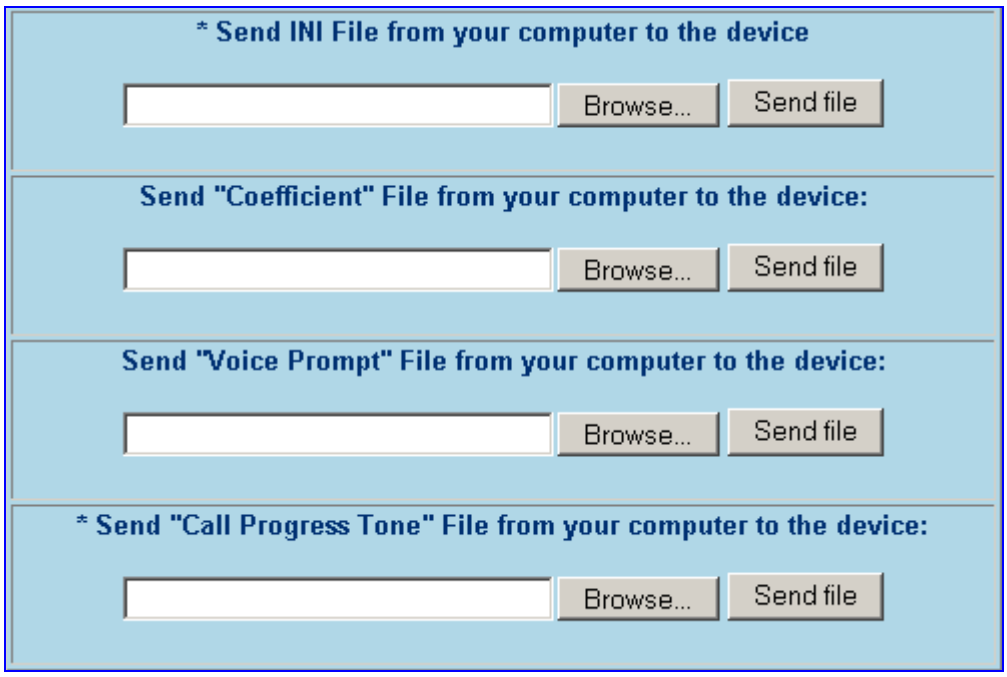
6.2.2 Downloading a Configuration File

The Auxiliary Files Download screen enables users to download to the Gateway the following files: *ini*, Call Progress Tones, Coefficient and Voice Prompt (currently applicable for MGCP/MEGACO).

➢ **To download a configuration file take these 8 steps:**

1. Click the **Software Upgrade** button.
2. Click the **Auxiliary Files Download** tab; the Auxiliary Files Download screen is displayed (shown in Figure 6-3).

Figure 6-3: Auxiliary Files Download Screen


* Send INI File from your computer to the device
Browse...
Send file
Send "Coefficient" File from your computer to the device:
Browse...
Send file
Send "Voice Prompt" File from your computer to the device:
Browse...
Send file
* Send "Call Progress Tone" File from your computer to the device:
Browse...
Send file

3. Click the **Browse** button that is in the box for the type of file you want to download.
4. Navigate to the folder that contains the file you want to download.
5. Click the file and click the **Open** button; the filename and path of the file appears in the box beside the **Browse** button.
6. Click the **Send File** button that is beside the box that contains the filename of the file you want to download.
7. Repeat steps 4 to 7 for each file you want to download.
8. Reset the Gateway (the new configuration is active only after restarting the Gateway).

7 MP-104 FXO: IP to Enterprise PBX Example

Analog Line Interconnect via the IP Network

Figure 7-1 shows AudioCodes' **MP-104 FXO** mediating between the PBX/PSTN world and the IP network. **A** is an enterprise User in Europe with its own PBX and AudioCodes' **MP-104 FXO** connected to analog lines. **B** is a SOHO (Small Office, Home Office) User in the USA, without a PBX, but with AudioCodes' **MP-104 FXS** connected to the phones.

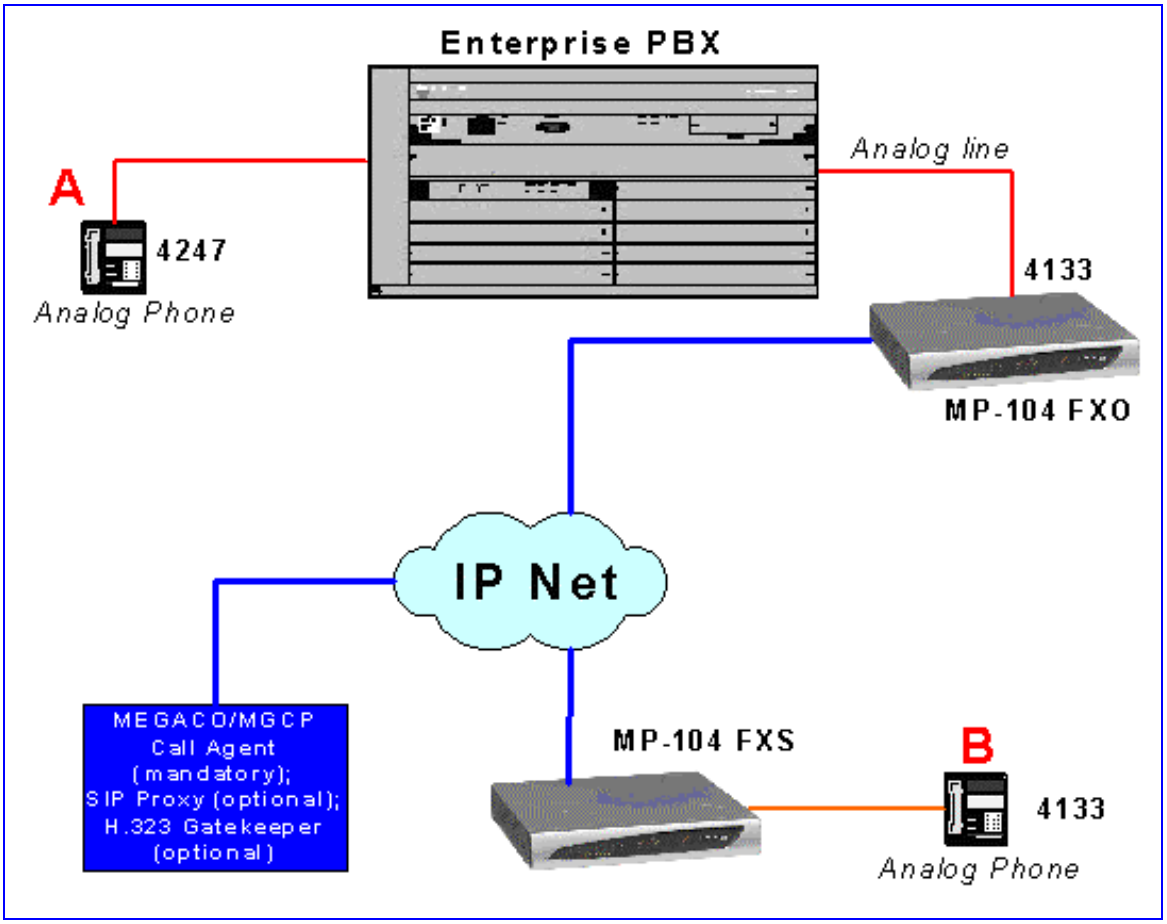
A calling B scenario (Automatic dialing set in the *ini* File)

1. User **A** off-hooks the phone, hears the enterprise PBX's dial tone, and dials User **B's** phone number 4133; the call is routed to the analog line connected to the **MP-104 FXO** which routes it to the **MP-104 FXS** that maps it to the phone of User **B**.

B calling A scenario (One-stage dialing set in the *ini* File)

1. User **B** off-hooks the phone, hears the **MP-104 FXS** device's dial tone, and dials 4247.
2. The **MP-104 FXS** device routes the call to the **MP-104 FXO** which dials it to the enterprise's PBX, which routes it to User **A's** extension.

Figure 7-1: MP-104 FXO: IP to Enterprise PBX Example



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